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Key Determinants of RTW Following Traumatic SCI: A Critically Appraised Topic

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CLINICAL SCENARIO:

It is a well-documented phenomenon that the employment rate of people following traumatic spinal cord injury (SCI) is drastically reduced after the initial insult (Chapin & Kewman, 2001; Krause & Pickelsimer, 2008; Marini, et. al., 2008; Tomassen, Post, & Van Asbeck, 2000; Yuen, Burik, & Krause, 2004). Return to gainful employment is one of the most important goals of any rehabilitation program for a person with an SCI. Yet, the rate of re-employment of this population can vary between 13 to 51% (Tomassen, Post, & Van Asbeck, 2000). This is considerably low compared to the 81% employment rate of the general population (Marini, et. al., 2008). Work, either gainful or volunteer, can be associated with a higher perceived quality of life, greater self-esteem and self-efficacy, increased social participation and maintenance of leisure interests. Conversely, unemployment for this population has been associated with an increased risk of pressure ulcers (Krause & Pickelsimer, 2008). As occupational therapists we assist our clients by "supporting health and participation through engagement in occupation" (AOTA, 2008) For clients that have sustained an SCI intervention may include employment seeking and acquisition, job performance skills training, or volunteer exploration and participation. As clinicians we understand that providing the highest quality of care means having a thorough understanding of the issue including any background information. In order to more clearly understand the findings of research in the areas of vocational rehabilitation and return to work this paper will provide a synthesis of research in this area with an emphasis on the determinants of return to work for persons with an SCI.

FOCUSSED CLINICAL QUESTION:

What are the determinants of return to work for persons that have sustained a spinal cord injury?

SUMMARY of Search, 'Best' Evidence' appraised, and Key Findings:

Four level III studies that examined return to work (RTW) for persons that have sustained an SCI have been identified (Chapin & Kewman, 2001; Krause & Pickelsimer, 2008; Marini, et. al., 2008; Tomassen, Post, & Van Asbeck, 2000; Yuen, Burik, & Krause, 2004). Additionally, one qualitative study was reviewed. The key findings are listed below.

- Access to VR services is significantly related to RTW. Specifically, job placement services (Chapin & Kewman, 2001 and Marini, et. al., 2008), above-average case expenditures (Marini, et. al., 2008), as well as access to employer contacts and intensive job exploration with peer-based job shadowing (Chapin & Kewman, 2001).
- Conversely, work disincentives (i.e. cessation or significant decreases of SSDI and SSI funding following re-employment have been found to be a barrier to RTW (Marini, et. al., 2008).
- Common physical and psychological barriers to RTW include presence of pressure ulcers, perceived poor health and physical incapability of working (Krause & Pickelsimer, 2008).
- Actively seeking re-employment and maintaining a sense of optimism regarding one's potential for RTW have been found to be predictors of obtaining competitive employment (Krause & Pickelsimer, 2008).
- RTW has been found to be most likely for light to moderate physical intensity jobs, persons with a Barthel index > 15/20 (Tomassen, Post, & Van Asbeck, 2000).
- For those that RTW is not an appealing option volunteerism can be a viable alternative. Participation in volunteerism has been found to be associated with increased QOL, adjustment to disability, as well as decreased depressive symptoms, health problems and hospitalizations (Yuen, Burik, & Krause, 2004).

CLINICAL BOTTOM LINE:

Vocational rehabilitation services may enhance RTW for persons that have sustained an SCI. Optimally, occupational therapy services that include work as a long-term goal may have the greatest impact on RTW for the client with SCI following medical stabilization and adjustment to disability. Provision of VR services 1-year post injury in a community-based setting, providing job placement services, is closely tied to local employers, and provides peer-based mentors may present the best model of service delivery.

Limitation of this CAT:

While this paper offers some insight into various determinants that likely impact the rate of RTW for persons with an SCI the results should be interpreted within the context of the research articles upon which it is based. This critically appraised topic has not been peer-reviewed to date and has been analysed by a practitioner with limited clinical experience. Further, analysis was not exhaustive and is strictly based on the five research articles listed in the references section at the end of this document.

SEARCH STRATEGY:

After development of the clinical question the author utilized the Pacific University Oregon electronic database to identify relevant research articles. Search procedures utilized included using key search terms (listed below), a review of identified article titles, reading the abstracts of articles directly pertaining to the PICO information listed below, printing articles that fit the PICO criteria, and then reviewing printed articles to determine appropriate fit for the PICO criteria. All studies published before 2000 were eliminated from

the review. Each of the remaining studies (N = 5) were analysed and included in this analysis.

Terms used to guide Search Strategy:

- **P**atient/Client Group: Traumatic SCI
- **I**ntervention (or Assessment): N/A
- **C**omparison: Employed (gainful or volunteer) Vs. Unemployed
- **O**utcome(s): Return to work

| Databases and sites searched | Search Terms | Limits used |
|-------------------------------------|---|--------------------|
| CINAHL Medline | SCI, quadriplegia, paraplegia, RTW, employment, supported employment, employment outcomes, occupation, VR, vocational, rehabilitation, quality of life, perceived quality of life, subjective well-being, psychosocial, benefits, community integration, disabilities, volunteering, volunteerism | English language |

INCLUSION and EXCLUSION CRITERIA

Inclusion:

- Published in 200 or later
- Participants were persons with a traumatic SCI
- All levels of evidence
- Written in English
- Comparison of employment to unemployment
- Comparison of volunteer participation to non-participation
- Longitudinal observational studies predicting return to work

Exclusion:

- Published before 2000
- Participants with congenital SCI
- Studies published strictly to explain demographics of the traumatic SCI population
- Studies evaluating the efficacy of assistive technology related to employment

RESULTS OF SEARCH

Table 1: Summary of Study Designs of Articles retrieved

| Study Design/ Methodology of Articles Retrieved | Level | Number Located | Author (Year) |
|--|--------------|---------------------------|---|
| Descriptive quantitative studies with a cross-sectional design | III | 3 | Krause & Pickelsimer, 2008; Tomassen, Post, & Van Asbeck, 2000; Yuen, Burik, & Krause, 2004 |
| Descriptive study with an ex-post facto design | III | 1 | Marini, et. al., 2008 |
| Qualitative study with a grounded theory design | NA | 1 | Chapin & Kewman, 2001 |

BEST EVIDENCE

The following study/paper was identified as the 'best' evidence and selected for critical appraisal. Reasons for selecting this study were:

- The study included the provision of intervention (VR services) for the selected population.
- The study utilized a large and comprehensive participant population (N = 10,901).

SUMMARY OF BEST EVIDENCE

Table 2: Description and appraisal of ex post facto study by Marini, et. al., 2008

Aim/Objective of the Study/Systematic Review:

To examine the effect of demographic variables, work disincentives, and rehabilitation services on employment outcomes of persons with SCI in state VR agencies.

Study Design:

The study employed an ex post facto design. Data for the study was pulled from the Department of Education Rehabilitation Service Administration (RSA) Case Service Report (RSA-911) data set for fiscal year 2001. This was the most current dataset available at the time the study was conducted. A data mining technique called exhaustive chi-squared automatic interaction detector (CHAID), was used to analyse the data. Classification trees were then built. CHAID uses a systematic algorithm to detect the strongest associations between predictors and the outcome variable. The statistical software SPSS AnswerTree 2.0 was used to conduct the CHAID analyses. The alpha level for all statistical tests was .01. This study corrected for the number of statistical tests within each predictor using the

Bonferroni correction feature of the AnswerTree software program. The study authors cited a small series of additional studies that have utilized CHAID for similar purposes, specifically pattern recognition, in justification of their methodology.

Setting:

VR agencies across the United States.

Participants:

The sample consisted of all 10,901 persons with SCI whose cases were closed by state VR (VR) agencies in the fiscal year 2001. The sample was 65% men and 35% women. Ethnic background included 69% European American, 16% African American, 13% Hispanic/Latino, 1% Native American, 1% Asian American. Nine hundred and ninety-one of these VR clients had co-occurring alcohol and other drug abuse problems. Mean age of participants was 41.6 years (SD=9.9). Forty percent were married, 30.4% were widowed, divorced or separated, and 29.9% were never married. Fifty percent completed high school, 21% had less than high school education, and 29% had some college education. The average time between application to eligibility was 1.6 months (SD=2.7) whereas the average time between eligibility and case closure was 20.5 months (SD=27.5). The average case expenditure was \$5,000.

Intervention Investigated

The study in question investigated VR services. The mean length of intervention for those found to be competitively employed was 26.4 months (SD = 25.5) while those not found to be competitively employed had a mean intervention length of 32.0 months (SD = 27.6). However, the persons providing intervention, including their qualifications, were not described in the study.

Outcome Measures:

Return to competitive employment in an integrated employment situation as defined by the US Department of Education's Rehabilitation Services Administration. Specific measures included employment status, demographic characteristics, work disincentives and receipt of VR services.

Main Findings:

Demographic Characteristics:

The overall employment success rate was 54%, which is considerably higher than the rate of between 25 – 35% (Marini et. al., 2008, p. 1) observed in previous studies. Neither gender nor race demonstrated a significant effect on RTW. Those participants that had some college education had the highest rate of RTW (60%). Clients who were married (58%) had a higher competitive employment rate compared to those who were never married and those that had been widowed, divorced, or separated. Clients with co-occurring psychiatric, alcohol or substance abuse disorders had a lower employment rate than those who did not.

VR outcomes:

The most significant predictor of employment outcomes was job placement services (74%). The effect size (odds-ratio) for job placement services was computed to be 3.00

and considered to be a medium effect. Clients who received job placement services had a significantly higher competitive employment rate (74%) than those who did not receive these services (48%). The second most important factor predicting employment outcomes for clients who received job placement services was case expenditures. Clients who received below average expenditures had the lowest employment outcomes (66%) compare with those with average (76%) and those with above average employment expenditures (83%). Those clients who were found to be competitively employed had a mean case expenditure of \$6,043 while those not competitively employed had a mean case expenditure of \$3,800. The third most important factor predicting employment outcomes for clients who did not receive job placement services was work disincentives (i.e. supplemental security income, social security disability income) (36% employment rate) compared to not receiving such disincentives (52% employment rate).

Original Authors' Conclusions:

Clients with an SCI who had the highest likelihood of RTW were those that received job placement services, had no work disincentives and had above average case expenditures. It is also beneficial to have a stable disability and overall health status. While job placement services have been found to be the greatest predictor of RTW the service is grossly underutilized (only 21% of clients used this service). Recent legislation (i.e. Ticket to Work and Work Incentives Improvement Act of 1999) has worked to decrease work disincentives, but it remains imperative that counsellors and their clients be educated about the importance of benefits counselling in VR.

Critical Appraisal:

Validity:

The study suitably utilized an ex post facto design methodology. As Marini, et. al. (2008) point out, this technique has been found by previous studies, including several related to healthcare, to be an effective method of extracting hidden predictive information from a large database. However, the study would have benefited from an explanation as to the potential implications of co-intervention on the results of the study. As clients who have sustained an SCI are regularly involved with various service providers following injury it is probable that the participants in the study were receiving additional services outside VR. Further, the study neglected to include any information regarding the qualifications of the VR personnel that provided the services. It is likely that the level of training of the VR counsellor would impact the outcome of intervention. Finally, participant dropouts were not addressed in the study. Due to the large number of participants in the study (N = 10,901) the number of dropouts would not have made a great impact; however, reporting dropouts provides a degree of transparency that lends credibility to a study. As the study utilized archival data and was not a randomized clinical trial analysis using the PEDro scale was not warranted.

Interpretation of Results:

Although the study has several limitations Marini, et. al. provide clinical practice guidelines for the provision of VR services. These guidelines provide a starting point for practitioners to improve employment outcomes for this diverse population. Further research is indicated and should include a large sample size, controls for contamination and co-intervention,

measurements of effect size for intervention and further implications for clinical practice. Some of the results of other studies included in this analysis have been found to be in agreement with the conclusions drawn by Marini, et. al. Such agreement includes the overall importance of long-term VR services in SCI rehabilitation (Tomassen, Post, & Van Asbeck, 2000) and the positive impact of job placement services (Chapin & Kewman, 2001). Demographics are also consistently found to impact RTW for persons with an SCI (Chapin & Kewman, 2001; Krause & Pickelsimer, 2008; Marini, et. al., 2008; Tomassen, Post, & Van Asbeck, 2000; Yuen, Burik, & Krause, 2004).

Summary/Conclusion:

The provision of VR is essential in fostering RTW for persons following SCI. Services should be offered long-term to allow for the greatest amount of benefit. The removal of work disincentives is of critical importance for RTW.

Table 3: Characteristics of included studies

| Chapin & Kewman, 2008 | |
|----------------------------------|--|
| Intervention investigated | NA |
| Comparison intervention | NA |
| Outcomes used | Participant interviews |
| Findings | <ul style="list-style-type: none"> • Increased optimism may promote employment for persons with SCI • Employment barriers and the perceptions of barriers as insurmountable need to be decreased to encourage RTW • Policies promoting RTW to a previous employer are likely to improve employment rates for people with an SCI. • Job exploration and job shadowing with peers and positive peer models may also improve employment after SCI |

| Krause & Pickelsimer, 2008 | |
|---------------------------------------|---|
| Intervention investigated | NA |
| Comparison intervention | NA |
| Outcomes used | Life Situation Questionnaire-Revised (reliability and validity unknown) |
| Findings | <ul style="list-style-type: none"> • Actively looking for work was associated with the greatest likelihood of employment (20.4% difference; $p < .001$). • Maintaining hope for RTW was significantly related to employment (10.5% difference; $p < .01$). • Health factors, not disincentives or resources, were the primary barriers to employment at follow-up. |

| Tomassessn, Post & Van Asbeck, 2000 | |
|--|--|
| Intervention investigated | NA |
| Comparison intervention | NA |
| Outcomes used | <ul style="list-style-type: none"> • Barthel Index (BI) • Participation in a retraining program • Physical intensity of pre-injury job |
| Findings | <ul style="list-style-type: none"> • Participants with a BI >15 were more than twice as likely to RTW (p=.0001) • RTW was > three times more likely for participants who participated in a retraining program (p=.03). • RTW was >3 times more likely for those whose pre-injury job required only light to moderate physical intensity. |

| Yuen, Burik, & Krause, 2004 | |
|--|---|
| Intervention investigated | NA |
| Comparison intervention | NA |
| Outcomes used | <ul style="list-style-type: none"> • Level of adjustment to disability • Overall quality of life • General health • Depressive symptoms • Hospitalizations |
| Findings | <ul style="list-style-type: none"> • Volunteers reported higher levels of QOL (p<.001), current adjustment (p<.001) and health (p<.01) than those not volunteering • Non-volunteers reported higher levels of depressive symptoms (p<.05) and more hospitalizations (p<.05). |

IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH

The available body of research on RTW for persons with a traumatic SCI suggests that VR may enhance RTW for persons that have sustained an SCI. Occupational therapy services focusing on work as a long-term goal are likely to have the greatest impact because they allow for prolonged and enhanced education that cannot be achieved over a short period of time. Furthermore, services provided after medical stabilization and adjustment to disability will likely promote RTW. An example would be to provide VR services 1-year post injury in a community-based setting that is closely tied to local employers. Additionally the availability of persons with an SCI employed within the community functioning as peer-based mentors would increase social support. Long-term treatment has been correlated with higher rates of re-employment. It should also be included that lower case expenditures have previously yielded lower rates of RTW for this population. What this means financially is that increased amounts of funding focusing on a comprehensive, long-term VR programming is needed. While most studies concede that the provision of employment services is important in SCI rehabilitation, consensus has not

been reached as to the amount of services, types of services, and the qualification of the personnel providing services. Further research should address these issues.

REFERENCES

- American Occupational Therapy Association. (2008). Occupational therapy practice framework: Domain and process (2nd ed.). *American Journal of Occupational Therapy*, 62,625–683.
- Chapin, M. H., & Kewman, D. G. (2001). Factors affecting employment following SCI: A qualitative study. *Rehabilitation Psychology*, 46(4), 400-416.
- Krause, J. S., & Pickelsimer, E. (2008). Relationship of perceived barriers employment and RTW five years later: A pilot study among 343 participants with SCI. *Rehabilitation Counselling Bulletin*, 51(2), 118-121. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=2009896317&site=ehost-live>
- Marini, I., Lee, G. K., Chan, F., Chapin, M. H., & Romero, M. G. (2008). VR service patterns related to successful competitive employment outcomes of persons with SCI. *Journal of VR*, 28(1), 1-13. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=2009854697&site=ehost-live>
- Tomassen, P., Post, M., & van Asbeck, F. (2000). RTW after SCI. *Spinal Cord*, 38(1), 51-55. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=2000035636&site=ehost-live>
- Yuen, H.K., Burik, J.K., & Krause, J.S. (2004). Physical and psychosocial well-being among adults with SCI: The role of volunteer activities. *Topics in SCI Rehabilitation*, 9(4), 19-25. Retrieved from CINAHL database.